Date Submitted: 08/25/25 11:55 am

# Viewing: BS-EDSC : Bachelor of Science in Economics and Data Science

Last approved: 04/14/25 12:56 pm

Last edit: 08/25/25 11:55 am

Changes proposed by: skang21

Catalog Pages Using this Program

Bachelor of Science in Economics and Data Science*

Program Status: Hiatus ~~Active~~

Requestor: Name: Sang-Baum Kang ~~Ayesha Qamer~~ E-mail: skang21@stuart.iit.edu ~~aqamer@iit.edu~~

Origination Date: 2025-8-25 ~~2025-4-14~~

Is this an interdisciplinary program?: Yes

Academic Unit: Business Administration

College: Stuart School of Business

Contributing Academic Unit(s)

| Academic Units |
|---|
| Applied Mathematics |
| Computer Science |

Program Title

Bachelor of Science in Economics and Data Science

Effective Academic Year: 2025 - 2026

Effective Term: Fall 2025

## In Workflow

1. SB Interdisciplinary Curriculum Committee Chair
2. Academic Affairs
3. Undergraduate Academic Affairs
4. SB Dean
5. Undergraduate Studies Committee Chair
6. Faculty Council Chair
7. Faculty Council Chair
8. Provost
9. President
10. Academic Affairs

## Approval Path

1. 08/25/25 12:28 pm Roland Calia (rcalia): Approved for SB Interdisciplinary Curriculum Committee Chair
2. 09/03/25 12:05 pm Ayesha Qamer (aqamer): Approved for Academic Affairs
3. 09/03/25 12:23 pm Joseph Gorzkowski (jgorzkow): Approved for Undergraduate Academic Affairs
4. 09/03/25 1:36 pm Rich Klein (rklein6): Approved for SB Dean

| | |
|---|---|
| Academic Level | Undergraduate |

## History

1. Nov 15, 2023 by Roland Calia (rcalia)
2. May 7, 2024 by Sang-Baum Kang (skang21)
3. Jun 3, 2024 by Sang-Baum Kang (skang21)
4. Apr 14, 2025 by Ayesha Qamer (aqamer)

*If all courses in a subject in your department are required, please enter each subject followed by the number ranges in the "Quick Add" field in the pop up box when you click the green plus button below. For example: ARCH 100-499.*

| | |
|---|---|
| What courses will factor the major GPA? | |
| Program Type | Degree |
| Degree Type | Bachelor of Science (BS) |

CIP Code
45.0603 - Econometrics and Quantitative Economics.

| | |
|---|---|
| Program Code | BS-EDSC |
| Program Attribute | |
| Total Program Credit Hours | 120 |

Please provide a summary and rationale for the requested program revision.

We put this program into a hiatus status. The program has enrolled no students since its inception, with no new students expected to join in Fall 2025. Stuart's Business Tech+ programs have demonstrated stronger enrollment demand, which justifies the allocation of research faculty to support business school accreditation requirements. We have a proposal pending for a new BS in Business Analytics, and Stuart is developing a BS in Business Economics and revising a Minor in Economics. ~~To reduce the required credits from 126 to 120 by lowering economics electives from 9 credits to 3 credits.To align the assessment plan with~~

~~the curriculum map.4/14/2025, AQ:Swapped out MATH 225 for STAT 225 as it was replaced/revised by AMAT.~~

## Program Narrative and Justification

Narrative description of how the institution determined the need for the program. For example, describe what need this program will address and how the institution became aware of that need. If the program is replacing a current program(s), identify the current program(s) that is being replaced by the new program(s) and provide details describing the benefits of the new program(s). If the program will be offered in connection with, or in response to, an initative by a governmental entity, provide details of that initiative.

This program is part of the undergraduate program incubator.
See https://docs.google.com/document/d/1e5Mlgsk_Fh4CJgkSBxhUjW--KqFrzZa3QMAYNd8uDO0/edit

The Bachelor of Science in Economics and Data Science degree focuses on applying data science concepts in the economics domain. Through the study of economics, students learn how the design of platforms shapes incentives, drives behavior, and determine social and economic outcomes including equity and efficiency. Coursework in data science teaches students how to manage, manipulate, and parse data to extract knowledge and insight. Data science graduates with a grounding in economics can use computational techniques to gain valuable insights from data to predict trends, solve business challenges, and help businesses make more efficient decisions.

Narrative description of how the program was designed to meet local market needs, or for an online program, regional or national market needs. For example, indicate if Bureau of Labor Statistics data or State labor data systems information was used, and/or if State, regional, or local workforce agencies were consulted. Include how the course content, program length, academic level, admission requirements, and prerequisites were decided; including information received from potential employers about course content; and information regarding the target students and employers.

The Bachelor of Science in Economics and Data Science was developed by the Stuart School of Business faculty in consultation with the faculty and leadership of the College of Computing as well as industry experts and practitioners

Narrative description of any wage analysis the institution may have performed, including any consideration of Bureau of Labor Statistics wage data related to the new program.

A Bachelor of Science in Economics and Data Science degree can provide an excellent preparation for private sector job markets, particular in the technology sector. Students with this degree have a relatively high median salary of approximately $100,00 according to the Bureau of Labor Statistics. The job outlook is excellent, with job growth projected to increase by 36% over the next 10 years for data science analysts. See https://www.bls.gov/ooh/math/data-scientists.htm

Narrative description of how the program was reviewed or approved by, or developed in conjunction with, one or more of the following: a) business advisory committees; b) program integrity boards; c) public or private oversight or regulatory agencies (not including the state licensing/authorization agency and accrediting agency); and d) businesses that would likely employ graduates of the program. For example, describe the steps taken to develop the program, identify when and with whom discussions were held, provide relevant details of any proposals or correspondence generated, and/or describe any process used to evaluate the program.

The Bachelor of Science in Economics and Data Science was developed by the Stuart School of Business faculty in consultation with the faculty and leadership of the College of Computing as well as industry experts and practitioners

### Admission Entry Details

What are the enrollment estimates?

Year 1 5 Year 2 10 Year 3 15

Attach Additional Program Justification Document(s) Please Approve 3 Stuart Undergraduate Program Revisions.pdf

## Academic Information

### Advising

Since quality advising is a key component of good retention, graduation, and career placement, how will students be mentored? What student professional organizations will be formed? How will the department work with the Career Services office to develop industry connections?

Students will be primarily advised by the Stuart Undergraduate Program Director with the assistance of a designated advisor in the College of Computing

### Program Resources

Which program resources are necessary to offer this program?

Personnel

Facilities

Describe the personnel requirements necessary to offer the program. Describe how and when resources will be made available to hire any additional personnel that are required.

No new personnel are required.

Describe the facilities requirements necessary to offer the program. Describe how and when resources will be made available to obtain any additional facilities that are required.

No new facilities are required.

## Proposed Catalog Entry

Admission Requirements

The Bachelor of Science in Economics and Data Science degree focuses on applying data science concepts in the economics domain. Through the study of economics, students learn how the design of platforms shapes incentives, drives behavior, and determine social and economic outcomes including equity and efficiency. Coursework in data science teaches students how to manage, analyze, and visualize data to find patterns and extract knowledge and insight. Economics graduates with a grounding in data science can use computational techniques to gain valuable insights from data to predict trends, solve business challenges, and help businesses make more efficient decisions.

Course Requirements

| Economics Required Courses | | (36) |
|---|---|---|
| BUS 100 | Introduction to Business and Economics | 3 |
| BUS 102 | Introduction to Business Analytics | 3 |
| BUS 221 | Business Statistics | 3 |
| or STAT 225 | Introductory Statistics | |
| BUS 321 | Analytics for Optimization | 3 |
| BUS 480 | Strategic Management and Design Thinking | 3 |
| ECON 151 | Microeconomics | 3 |
| ECON 152 | Macroeconomics | 3 |
| ECON 311 | Intermediate Microeconomics | 3 |
| ECON 312 | Intermediate Macroeconomics | 3 |

| | | |
|---|---|---|
| ECON 382 | Business Economics | 3 |
| ECON 423 | Economics of Capital Investments | 3 |
| Economics Elective - Choose one course | | 3 |
| BUS 210 | Introduction to Accounting | 3 |
| BUS 211 | Financial Accounting | 3 |
| BUS 212 | Managerial Accounting | 3 |
| BUS 301 | Organizational Behavior | 3 |
| BUS 305 | Operation and Supply Chain Analytics | 3 |
| BUS 311 | Strategic Cost Management | 3 |
| BUS 341 | Business Law | 3 |
| BUS 361 | Topics in Entrepreneurship | 3 |
| BUS 371 | Marketing Fundamentals | 3 |
| BUS 452 | International Finance | 3 |
| BUS 454 | Investments | 3 |
| BUS 455 | Corporate Finance | 3 |
| BUS 457 | Financial Modeling | 3 |
| BUS 458 | Financial Derivatives | 3 |
| BUS 472 | New Product Development | 3 |
| BUS 473 | Marketing Analytics | 3 |
| BUS 475 | Sales Management and Analytics | 3 |
| BUS 476 | Consumer Behavior | 3 |
| ECON 383 | Sports Economics | 3 |
| **Data Science Required Courses** | | **(21)** |
| DS 151 | Introduction to Data Science | 3 |
| DS 261 | Ethics and Privacy in Data Science | 3 |
| DS 451 | Data Science Life Cycle | 3 |
| ECON 251 | Introduction to Econometrics | 3 |
| MATH 474 Probability and Statistics or MATH 476 Statistics | | 3 |
| Data Science Electives - Choose one course from CS and one course from AMAT, DS or STAT | | 6 |
| CS 422 | Data Mining | 3 |
| CS 430 | Introduction to Algorithms | 3 |
| CS 484 | Introduction to Machine Learning | 3 |

| | | |
|---|---|---|
| CS 584 | Machine Learning | 3 |
| DS 251 | Mathematical Foundations for Data Science I | 3 |
| DS 351 | Mathematical Foundations for Data Science II | 3 |
| MATH 350 | Introduction to Computational Mathematics | 3 |
| MATH 380 | Introduction to Mathematical Modeling | 3 |
| MATH 435 | Linear Optimization | 3 |
| MATH 446 | Introduction to Time Series | 3 |
| MATH 475 | Probability | 3 |
| MATH 484 | Regression | 3 |
| MATH 497 | Special Problems | 3 |
| MATH 569 | Statistical Learning | 3 |
| MATH 574 | Bayesian Computational Statistics | 3 |
| STAT 514 | Applied Computational Statistics for Analytics | 3 |
| **Mathematics Requirements** | | **(17)** |
| MATH 151 | Calculus I | 5 |
| MATH 152 | Calculus II | 5 |
| MATH 251 | Multivariate and Vector Calculus | 4 |
| MATH 332 | Elementary Linear Algebra | 3 |
| **Computer Science Requirements** | | **(4)** |
| CS 115 | Object-Oriented Programming I | 2 |
| CS 116 | Object-Oriented Programming II | 2 |
| Students may substitute CS 115 and CS 116 for CS 201 Accelerated Intro to Computer Science (4 credits) | | |
| **Natural Science and Engineering Requirements** | | **(10)** |
| See Illinois Tech Core Curriculum, section D | | 10 |
| **Interprofessional Projects (IPRO)** | | **(6)** |
| See Illinois Tech Core Curriculum, section E | | 6 |
| **Humanities and Social Science Requirements** | | **(21)** |
| See Illinois Tech Core Curriculum, section B and C | | 21 |
| **Free Electives** | | **(5)** |
| Select 5 credit hours. | | 5 |
| Total Credit Hours | | 120 |

Sample Curriculum/Program Requirements

Year 1

| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
|---|---|---|---|
| BUS 100 | 3 | BUS 102 | 3 |
| ECON 151 | 3 | ECON 152 | 3 |
| CS 115 | 2 | CS 116 | 2 |
| Humanities Elective (200 Level) | 3 | MATH 152 | 5 |
| MATH 151 | 5 | Science Elective | 4 |
| | 16 | | 17 |

Year 2

| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
|---|---|---|---|
| BUS 321 | 3 | BUS 221 or STAT 225 | 3 |
| ECON 311 | 3 | ECON 312 | 3 |
| DS 151 | 3 | DS 261 | 3 |
| MATH 251 | 4 | MATH 332 | 3 |
| Science Elective | 3 | Science Elective | 3 |
| | 16 | | 15 |

Year 3

| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
|---|---|---|---|
| ECON 251 | 3 | ECON 382 | 3 |
| MATH 474 or 476 | 3 | Economics Elective | 3 |
| DS 451 | 3 | Data Science Elective | 3 |
| Humanities Elective (300+) | 3 | IPRO Elective I | 3 |
| Social Science Elective | 3 | Humanities Elective (300+) | 3 |
| | 15 | | 15 |

Year 4

| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
|---|---|---|---|
| ECON 423 | 3 | BUS 480 | 3 |
| Data Science Elective | 3 | Free Elective | 3 |
| IPRO Elective II | 3 | Humanities or Social Science Elective | 3 |
| Social Science Elective (300+) | 3 | Social Science Elective (300+) | 3 |
| Free Elective | 2 | | |
| | 14 | | 12 |

Total Credit Hours: 120

Specialization Requirements

## Program Outcomes and Assessment Process

What are your learning objectives in this program? Please list each learning objective in the boxes below:

*Note: These should be the same as described in your assessment plan at the bottom of this form.*

Students will prepare and deliver oral presentations that are well-structured, technically competent and make good use of aids to support evidence-driven conclusions.

Students will prepare documents in text-based media that are clear, accurate, and appropriate for the intended audience.

Students will be able to develop well-reasoned arguments and conclusions.

Graduates will possess the analytical skills to support business decision making.

Effectively derive and communicate useful insights from data, including through storytelling and visualization.

Upload your assessment plan here:

Assessment Plan v2023 Stuart BS Economics and Data Science.xlsx

## Undergraduate Program Requirements

What courses will factor the major GPA?

### Undergraduate Degree Requirements

| | |
|---|---|
| Minimum credit hours | 120 |
| Specialization required? | No |

Minor required?
No

## Proposed General Curriculum

| List Major Course Requirements | | |
|---|---|---|
| Economics Required Courses | | |
| BUS 100 | Introduction to Business and Economics | 3 |
| BUS 102 | Introduction to Business Analytics | 3 |
| BUS 221 | Business Statistics | 3 |
| BUS 321 | Analytics for Optimization | 3 |
| BUS 480 | Strategic Management and Design Thinking | 3 |
| ECON 151 | Microeconomics | 3 |
| ECON 152 | Macroeconomics | 3 |
| ECON 311 | Intermediate Microeconomics | 3 |
| ECON 312 | Intermediate Macroeconomics | 3 |
| ECON 382 | Business Economics | 3 |
| ECON 423 | Economics of Capital Investments | 3 |
| Data Science Required Courses | | |
| DS 151 | Introduction to Data Science | 3 |
| DS 261 | Ethics and Privacy in Data Science | 3 |
| DS 451 | Data Science Life Cycle | 3 |
| ECON 251 | Introduction to Econometrics | 3 |
| MATH 474 | Probability and Statistics | 3 |
| or MATH 476 | Statistics | |
| Total Credit Hours | | 48 |

| List Mathematics Requirements | | |
|---|---|---|
| Mathematics Requirements | | |
| MATH 151 | Calculus I | 5 |
| MATH 152 | Calculus II | 5 |
| MATH 251 | Multivariate and Vector Calculus | 4 |
| MATH 332 | Elementary Linear Algebra | 3 |

| | | |
|---|---|---|
| Total Credit Hours | | 17 |
| List Science Requirements | | |
| Natural Science and Engineering Requirements | | |
| See Illinois Tech Core Curriculum, section D | | 10 |
| Total Credit Hours | | 10 |
| List Computer Science Requirements | | |
| Computer Science Requirements | | |
| CS 115 | Object-Oriented Programming I | 2 |
| CS 116 | Object-Oriented Programming II | 2 |
| Students may substitute CS 115 and CS 116 for CS 201 Accelerated Intro to Computer Science (4 credits) | | |
| Total Credit Hours | | 4 |
| List Humanities and Social Sciences Requirements | | |
| Humanities and Social Science Requirements | | |
| See Illinois Tech Core Curriculum, section B and C | | 21 |
| Total Credit Hours | | 21 |
| List Interprofessional Project (IPRO) Requirements | | |
| Interprofessional Projects (IPRO) | | |
| See Illinois Tech Core Curriculum, section E | | 6 |
| Total Credit Hours | | 6 |
| List Technical Elective Course Options | | |
| Economics Electives - Choose one course | | 3 |
| BUS 210 | Introduction to Accounting | 3 |
| BUS 211 | Financial Accounting | 3 |
| BUS 212 | Managerial Accounting | 3 |
| BUS 301 | Organizational Behavior | 3 |

| | | |
|---|---|---|
| BUS 305 | Operation and Supply Chain Analytics | 3 |
| BUS 311 | Strategic Cost Management | 3 |
| BUS 341 | Business Law | 3 |
| BUS 361 | Topics in Entrepreneurship | 3 |
| BUS 371 | Marketing Fundamentals | 3 |
| BUS 452 | International Finance | 3 |
| BUS 454 | Investments | 3 |
| BUS 455 | Corporate Finance | 3 |
| BUS 457 | Financial Modeling | 3 |
| BUS 458 | Financial Derivatives | 3 |
| BUS 472 | New Product Development | 3 |
| BUS 473 | Marketing Analytics | 3 |
| BUS 475 | Sales Management and Analytics | 3 |
| BUS 476 | Consumer Behavior | 3 |
| ECON 383 | Sports Economics | 3 |
| Data Science Electives - Choose one course from CS and one course from AMAT, DS or STAT | | 6 |
| CS 422 | Data Mining | 3 |
| CS 430 | Introduction to Algorithms | 3 |
| CS 484 | Introduction to Machine Learning | 3 |
| CS 584 | Machine Learning | 3 |
| DS 251 | Mathematical Foundations for Data Science I | 3 |
| DS 351 | Mathematical Foundations for Data Science II | 3 |
| MATH 350 | Introduction to Computational Mathematics | 3 |
| MATH 380 | Introduction to Mathematical Modeling | 3 |
| MATH 435 | Linear Optimization | 3 |
| MATH 446 | Introduction to Time Series | 3 |
| MATH 475 | Probability | 3 |
| MATH 484 | Regression | 3 |
| MATH 497 | Special Problems | 0 |
| MATH 574 | Bayesian Computational Statistics | 3 |
| STAT 514 | Applied Computational Statistics for Analytics | 3 |
| MATH 569 | Statistical Learning | 3 |

| | | |
|---|---|---|
| MATH 574 | Bayesian Computational Statistics | 3 |
| Total Credit Hours | | 9 |

List Free Elective Credit Hours (if applicable): 5

Semester-by-semester plan of study for the degree program

Year 1

| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
|---|---|---|---|
| BUS 100 | 3 | BUS 102 | 3 |
| ECON 151 | 3 | ECON 152 | 3 |
| CS 115 | 2 | CS 116 | 2 |
| Humanities Elective (200 Level) | 3 | MATH 152 | 5 |
| MATH 151 | 5 | Science Elective | 4 |
| | 16 | | 17 |

Year 2

| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
|---|---|---|---|
| BUS 321 | 3 | BUS 221 or MATH 225 | 3 |
| ECON 311 | 3 | ECON 312 | 3 |
| DS 151 | 3 | DS 261 | 3 |
| MATH 251 | 4 | MATH 332 | 3 |
| Science Elective | 3 | Science Elective | 3 |
| | 16 | | 15 |

Year 3

| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
|---|---|---|---|
| ECON 251 | 3 | ECON 382 | 3 |
| MATH 474 or 476 | 3 | Economics Elective | 3 |
| DS 451 | 3 | Data Science Elective | 3 |
| Humanities Elective (300+) | 3 | IPRO Elective I | 3 |
| Social Science Elective | 3 | Humanities Elective (300+) | 3 |
| | 15 | | 15 |

Year 4

| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
|---|---|---|---|
| ECON 423 | 3 | BUS 480 | 3 |
| Data Science Elective | 3 | Free Elective | 3 |
| IPRO Elective II | 3 | Humanities or Social Science Elective | 3 |

| | | | |
|---|---|---|---|
| Social Science Elective (300+) | 3 | Social Science Elective (300+) | 3 |
| Free Elective | 2 | | |
| | 14 | | 12 |

Total Credit Hours: 120

Report to Faculty Council

Reviewer Comments

Key: 616